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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/083,504	02/27/2002	Hiroshi Morita	381NP/50838	6490

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EXAMINER

NORRIS, JEREMY C

ART UNIT PAPER NUMBER

2827

DATE MAILED: 03/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/083,504

Applicant(s)

MORITA ET AL.

Examiner

Jeremy C. Norris

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6, 8, 10 and 13-18 is/are rejected.
- 7) ☒ Claim(s) 5, 7, 9, 11, 12 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation

under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-4, 6, 8, 10, and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,134,040 (hereafter Benz), in view of US 6,514,557 (hereafter Finnemore).

Benz discloses, referring to figure 1, a superconducting line connection structure for connecting two or more superconducting lines (4, 6), wherein the superconducting line connection structure comprises superconductor powder (2) present between said superconducting lines. Benz does not specifically disclose that the superconductor powder comprises magnesium diboride [claim 1]. However, it is known in the art to use magnesium diboride as a superconducting material as evidenced by Finnemore. Therefore it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use magnesium diboride as the superconducting powder in the invention of Benz. The motivation for doing so would have been to use a superconductor that is simple in structure (see Finnemore col. 1, lines 25-40). The modified invention of Benz further discloses a metal powder or an alloy powder in a mixture with the superconducting powder between said superconducting lines (see col. 7, lines 35-50) [claim 2], wherein said superconducting lines and said superconducting powder are enclosed in a coating material (12) made of a pure metal of gold, silver, copper, platinum, palladium, aluminum, niobium, lead, tin, magnesium, indium,

tungsten, cobalt, nickel, iron, tantalum or chromium, or an alloy containing at least one of said metals (see col. 7, lines 50-65) [claim 4], wherein heating is performed to reach the temperature equal to or higher than the range where a part of (1) said superconducting line, or (2) said superconducting powder melts down (see col. 8, lines 20-30) [claim 8], wherein at least one of said multiple superconducting lines to be connected has a critical temperature equal to or higher than that of magnesium diboride [claim 10], wherein the superconducting line connection is a part of a superconducting line [claim 15], wherein the metal powder or alloy powder has a melting point lower than the superconducting powder [claim 16], wherein said superconducting line: and the mixture of superconducting powder and metal powder or alloy powder are enclosed in a coating material made of a pure metal of gold, silver, copper, platinum, palladium, aluminum, niobium, lead, tin, magnesium, indium, tungsten, cobalt, nickel, iron, tantalum or chromium, or an alloy containing at least one of said metals (see col. 7, lines 50-65) [claim 17], wherein heating is performed to reach the temperature equal to or higher than the range where a part of any one of (1) said superconducting line, (2) said superconducting powder and (3) said pure metal powder or said alloy powder melts down (see col. 8, lines 20-30) [claim 18].

Furthermore, regarding claim 3, the modified invention of Benz does not specifically state that the average particle size of said superconducting powder is 20 microns or less. However, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to make the particle size commensurate with the design

constraints of the device. Moreover, a change in size is generally recognized as being within the level of ordinary skill in the art. *In re Rose*, 105 USPQ 237 (CCPA 1955).

Moreover, regarding claim 6, the modified invention of Benz does not specifically state that the density of said superconducting powder is 50 % or more of theoretical density. However, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to compose the powder in the range to ensure a reliable electrical connection. In addition, it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Additionally, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to use the modified invention of Benz to comprise a superconducting magnet apparatus, since Finnemore teaches that this is a common application of superconducting lines (see col., 1, lines 40-50) [claims 13, 14].

Allowable Subject Matter

Claims 5, 7, 9, 11, 12, and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 5 states the limitation "wherein a superconducting filament enclosed in said

superconducting line is directly in contact with said superconducting powder at least on some portion of the contact surface between said superconducting line and said superconducting powder". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art. Claim 7 states the limitation "wherein heat treatment of said superconducting line connection structure is not effected". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art. Claims 9 and 19 state the limitation "a second step of deforming the portion produced in the first step by applying a pressure of 1 ton/cm² or more thereto". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art. Claim 11 states the limitation "wherein the superconducting line to be connected is a superconducting stranded wire formed by twisting multiple superconducting lines". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,786,304 Kimura et al.,

US 6,429,174 Sengupta.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 703-306-

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5737. The examiner can normally be reached on Mon.-Th., 9AM - 6:30 PM and alt. Fri. 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCSN
March 18, 2003


RAMAND CUNEO
SUPERVISORY PATENT EXAMINER
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